PHYSICS 12 FORMULAE

Vector Kinematics in Two Dimensions

$$v = v_0 + at \qquad \overline{v} = \frac{v + v_0}{2}$$

$$v^2 = v_0^2 + 2ad \qquad d = v_0 t + \frac{1}{2}at^2$$

Vector Dynamics

$$F_{net} = ma \qquad F_g = mg$$

$$F_{fr} = \mu F_N$$

Work, Energy, and Power

$$W = Fd \qquad E_p = mgh$$

$$E_k = \frac{1}{2}mv^2 \qquad P = \frac{W}{\Delta t}$$

Momentum

$$p = mv \qquad \Delta p = F_{net}\,\Delta t$$

Equilibrium

$$\tau = Fd$$

Circular Motion

$$T = \frac{1}{f} \qquad a_c = \frac{v^2}{r} = \frac{4\partial^2 r}{T^2}$$

$$F_c = ma_c$$

Gravitation

$$F_g = \mathrm{G}\frac{m_1 m_2}{r^2}$$

Electrostatics

$$F = \mathrm{k}\frac{Q_1 Q_2}{r^2} \qquad E = \frac{F}{Q} \qquad E = \mathrm{k}\frac{Q}{r^2}$$

$$\Delta V = \frac{\Delta E_p}{Q} \qquad E = \frac{\Delta V}{d}$$

$$E_p = \mathrm{k}\frac{Q_1 Q_2}{r} \qquad V = \mathrm{k}\frac{Q}{r}$$

Electric Circuits

$$I = \frac{Q}{\Delta t} \qquad V = IR$$

$$P = IV \qquad V_{terminal} = \mathcal{E} \pm Ir$$

Electromagnetism

$$F = BIl \qquad F = QvB$$

$$B = \mu_0 nI = \mu_0 \frac{N}{l} I \qquad \mathcal{E} = Blv$$

$$\Phi = BA \qquad \mathcal{E} = -N\frac{\Delta\Phi}{\Delta t}$$

$$V_{back} = \mathcal{E} - Ir \qquad \frac{V_s}{V_p} = \frac{N_s}{N_p} = \frac{I_p}{I_s}$$